

IV. AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A controlled atmosphere cutting method, ~~wherein in a cutting method of comprising the steps of:~~

providing a workpiece and a cutting tool with a cutting edge, the workpiece and at least the cutting edge of the cutting tool being fabricated from a material susceptible to formation an oxide film thereon;

cutting the workpiece with the cutting edge of the cutting tool; and

supplying gas adjacent to where the workpiece is being cut in an atmosphere of a machining portion and performing cutting when a workpiece is cut, the gas containing a concentration of oxygen higher than an oxygen concentration in air is supplied as atmospheric gas to bring the machining portion into an oxidized atmosphere, so that sufficient to form an oxide film is formed between a the cutting edge of a cutting tool and the workpiece and a damage and wear are reduced on the tool, wherein at least one of the cutting tool and the workpiece includes titanium or a titanium alloy as the workpiece is being cut.

2. (Original) The controlled atmosphere cutting method using oxygen enrichment according to claim 1, wherein the atmospheric gas is oxygen enriched air in which oxygen in air is condensed.

3. (Original) The controlled atmosphere cutting method using oxygen enrichment according to claim 1 or 2, wherein the atmospheric gas has an oxygen concentration up to 40%, exceeding an oxygen concentration of air.

4. (Previously Presented) The controlled atmosphere cutting method using oxygen enrichment according to claim 1 or 2, wherein the atmospheric gas is supplied to the machining portion by one or two or more of the external supply system for blowing gas from an outside of a cutting device by using a nozzle, a peripheral supply system for supplying gas along an outer periphery of the cutting

tool, and the internal supply system for blowing and supplying gas via a hole formed in the cutting tool.

5. (Withdrawn; Previously Presented) A cutting tool, in which a gas supply hole connected to a supply side of atmospheric gas is formed in a tool and an exhaust hole of a gas supply hole is opened on a tip of a body of the tool, wherein the exhaust hole is opened in a direction of blowing atmospheric gas to a cutting edge on a cutting blade of the tool.

6. (Withdrawn; Previously Presented) The cutting tool according to claim 5, wherein the tool is an end mill, the gas supply hole is formed in an axial direction in the end mill, and the gas supply hole is divided at the tip of the tool so that the exhaust hole is opened to the cutting edge of each cutting blade.

7. (New) The controlled atmosphere cutting method according to claim 1, wherein the workpiece and the cutting tool are oxide-free prior to the step of cutting the workpiece.

8. (New) The controlled atmosphere cutting method according to claim 1, wherein the oxygen concentration is in a range of approximately 32% and 40%.